What is claimed is:

1. A method of amplifying RNA sequences comprising:
   a) reverse transcribing of RNA to form cDNA;
   b) self-ligating said cDNA to form concatemers or circular cDNA products; and
   c) amplifying the ligated cDNA products using random-sequence primers and DNA polymerase.

2. The method of claim 1, wherein the DNA polymerase has strand displacement activity.

3. The method of claim 1, wherein the DNA polymerase is selected from the group consisting of *Thermoanaerobacter thermohydrosulfuricus* DNA polymerase, *Thermococcus litoralis* DNA polymerase I, *E. coli* DNA polymerase I, *Taq* DNA polymerase I, *Tth* DNA polymerase I, *Bacillus stearothermophilus* (*Bst*) DNA polymerase I, *E. coli* DNA polymerase III, bacteriophage T5 DNA polymerase, bacteriophage M2 DNA polymerase, bacteriophage T4 DNA polymerase, bacteriophage T7 DNA polymerase, bacteriophage phi29 DNA polymerase, bacteriophage PRD1 DNA polymerase, bacteriophage phi15 DNA polymerase, bacteriophage phi21 DNA polymerase, bacteriophage PZE DNA polymerase, bacteriophage PZA DNA polymerase, bacteriophage Nf DNA polymerase, bacteriophage M2Y DNA polymerase, bacteriophage B103 DNA polymerase, bacteriophage SF5 DNA polymerase, bacteriophage GA-1 DNA polymerase, bacteriophage Cp-5 DNA polymerase, bacteriophage Cp-7 DNA polymerase, bacteriophage PR4 DNA polymerase, bacteriophage PR5 DNA polymerase, bacteriophage PR722 DNA polymerase and bacteriophage L17 DNA polymerase.

4. The method of claim 1, wherein the cDNA is converted into double-stranded cDNA prior to the self-ligating step.

5. The method of claim 1, wherein the random-sequence primers are nuclease resistant.

6. A method of amplifying RNA sequences comprising:

a) reverse transcribing of RNA to form cDNA using a primer that comprises the sequence of an RNA polymerase promoter;

b) self-ligating the said cDNA to form concatemers or circular cDNA products;

c) amplifying the resulting ligated cDNA using random-sequence primers and DNA polymerase; and

d) transcribing the resulting amplified, promoter-containing DNA using RNA polymerase.

7. The method of claim 6, wherein the DNA polymerase has strand displacement activity.

8. The method of claim 6, wherein the RNA polymerase is T7 RNA polymerase, T3 RNA polymerase or SP6 RNA polymerase.

9. The method of claim 6, wherein the DNA polymerase is selected from the group consisting of *Thermoanaerobacter thermohydrosulfuricus* DNA polymerase, *Thermococcus litoralis* DNA polymerase I, *E. coli* DNA polymerase I, *Taq* DNA polymerase I, *Tth* DNA polymerase I, *Bacillus stearothermophilus* (*Bst*) DNA polymerase I, *E. coli* DNA polymerase III, bacteriophage T5 DNA polymerase, bacteriophage M2 DNA polymerase, bacteriophage T4 DNA polymerase , bacteriophage T7 DNA polymerase, bacteriophage phi29 DNA polymerase, bacteriophage PRD1 DNA polymerase, bacteriophage phi15 DNA polymerase, bacteriophage phi21 DNA polymerase, bacteriophage PZE DNA polymerase, bacteriophage PZA DNA polymerase, bacteriophage Nf DNA polymerase, bacteriophage M2Y DNA polymerase, bacteriophage B103 DNA polymerase, bacteriophage SF5 DNA polymerase, bacteriophage GA-1 DNA polymerase, bacteriophage Cp-5 DNA polymerase, bacteriophage Cp-7 DNA polymerase, bacteriophage PR4 DNA polymerase, bacteriophage PR5 DNA polymerase, bacteriophage PR722 DNA polymerase and bacteriophage L17 DNA polymerase.

10. The method of claim 6, wherein the cDNA is converted into double-stranded cDNA prior to the self-ligating step.

11. The method of claim 6, wherein the random-sequence primers are nuclease resistant.

12. The method of claim 6, wherein said primer further comprises a restriction enzyme recognition sequence and wherein the amplified, promoter containing DNA is treated with a restriction enzyme prior to transcribing.

13. The method of claim 6, wherein said primer comprises an RNA polymerase termination sequence.

14. A method of amplifying RNA sequences comprising:

a) reverse transcribing RNA to form cDNA;

b) self-ligating the cDNA to form concatemers or circular cDNA products; and

c) amplifying the resulting self-ligated cDNA using one or more specific sequence primers by isothermal specific sequence primer based DNA amplification.

15. The method of claim 14, wherein 1 to 50 said specific sequence primers are used.

16. The method of claim 14, wherein said one or more specific sequence primers are each independently between 7 and 50 nucleotides long.

17. The method of claim 16, wherein said one or more specific sequence primers are each independently between 12 and 25 nucleotides long.

18. The method of claim 1, wherein the DNA polymerase has strand displacement activity.

19. The method of claim 1, wherein the DNA polymerase is selected from the group consisting of *Thermoanaerobacter thermohydrosulfuricus* DNA polymerase, *Thermococcus litoralis* DNA polymerase I, *E. coli* DNA polymerase I, *Taq* DNA polymerase I, *Tth* DNA polymerase I, *Bacillus stearothermophilus* (*Bst*) DNA polymerase I, *E. coli* DNA polymerase III, bacteriophage T5 DNA polymerase, bacteriophage M2 DNA polymerase, bacteriophage T4 DNA polymerase , bacteriophage T7 DNA polymerase, bacteriophage phi29 DNA polymerase, bacteriophage PRD1 DNA polymerase, bacteriophage phi15 DNA polymerase, bacteriophage phi21 DNA polymerase, bacteriophage PZE DNA polymerase, bacteriophage PZA DNA polymerase, bacteriophage Nf DNA polymerase, bacteriophage M2Y DNA polymerase, bacteriophage B103 DNA polymerase, bacteriophage SF5 DNA polymerase, bacteriophage GA-1 DNA polymerase, bacteriophage Cp-5 DNA polymerase, bacteriophage Cp-7 DNA polymerase, bacteriophage PR4 DNA polymerase, bacteriophage PR5 DNA polymerase, bacteriophage PR722 DNA polymerase and bacteriophage L17 DNA polymerase.

20. The method of claim 1, wherein the cDNA is converted into double-stranded cDNA prior to the self-ligating step.

21. The method of claim 14, wherein said one or more specific sequence primers are nuclease resistant.

22. A method of producing labeled DNA comprising, amplifying DNA according to the method of claim 1 or 14, wherein said amplifying step further comprises including one or more detectably labeled nucleotide analogs or one or more nucleotide analogs providing a means for direct or indirect attachment of a detection label.

23. The process of claim 22, wherein the labeled DNA is used for hybridization analysis.

24. The process of claim 23, wherein said hybridization analysis is expression analysis performed using a microarray.

25. A method of producing labeled RNA comprising, amplifying RNA according to the method of claim 6, wherein said transcribing step d), further comprises including one or more detectably labeled nucleotide analogs or one or more nucleotide analogs providing a means for direct or indirect attachment of a detection label.

26. The process of claim 25, wherein the labeled RNA is used for hybridization analysis.

27. The process of claim 26, wherein said hybridization analysis is expression analysis performed using a microarray.

28. A method of identifying an RNA sequence comprising, amplifying RNA according to the method of any one of claims 1, 6 or 13, and identifying the resulting amplified RNA by a sequence dependent detection method.

29. An RNA amplification kit comprising reverse transcriptase, phi29 DNA polymerase, and RNA polymerase.

30. The RNA amplification kit of claim 29, further comprising random sequence amplification primers.